

Evidence-Based Practices Estimates

ESTIMATING POPULATIONS FOR FSP, IPS, and CSC IMPLEMENTATION



PRESENTED BY

HAYLEA HANNAH, PHD, MSPH
SENIOR EPIDEMIOLOGIST

DAWN KAISER, LCSW, CPHQ
SENIOR DIRECTOR

AMIE MILLER, PSY.D, LMFT
EXECUTIVE DIRECTOR

Methods for Estimating Populations for ACT/FACT and Justice-Involvement among FSP Populations

For Uninsured + Medi-Cal Eligible individuals 19-64 years old

Webinar Series

1

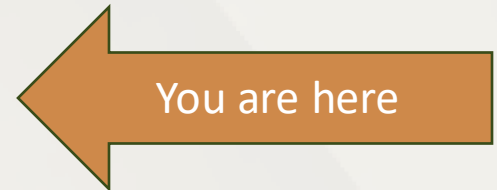
Introduction & Methods Overview – October 28, 2025

2

FSP and IPS Model – October 31, 2025

3

Justice-Involvement, ACT/FACT Model – November 4, 2025

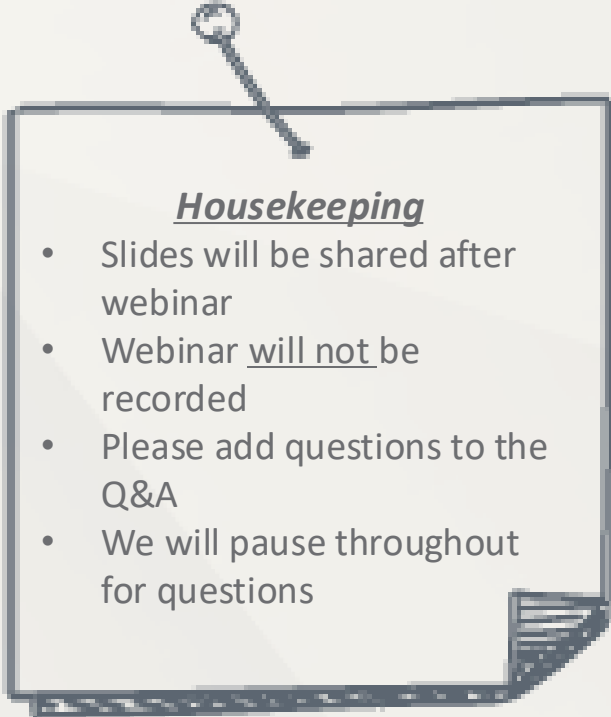


4

CSC Model & Considerations for Interpretation of Estimates – November 6, 2025

Agenda

- Background, Objectives, & EBP overview
- Simulation model methods
- Overview of data sources and what they're estimating –ACT/FACT
- Review of results – ACT/FACT
- Overview of data sources and what they're estimating – Justice-Involvement
- Review of results – Justice-Involvement
- Considerations for interpretation of estimates
- Q&A



Housekeeping

- Slides will be shared after webinar
- Webinar will not be recorded
- Please add questions to the Q&A
- We will pause throughout for questions

Keep in mind...

Background

This will get complicated....

Because estimating clinical need and planning new services using publicly available data is complicated!

Model Objectives

Objectives

To assist BHPs with completing their BHSA Integrated Plan, DHCS commissioned CalMHSA to estimate Medi-Cal + uninsured populations that may have a clinical need for the following:

Full-Service Partnerships (FSP) and the following sub-categories within FSP:

- Assertive Community Treatment (ACT)
 - Forensic Assertive Community Treatment (FACT)
- FSP Intensive Case Management (ICM)
- Individual Placement and Support Supported Employment (IPS)
- Coordinated Specialty Care for First Episode Psychosis (CSC FEP)

Additional Ask

Estimate justice involvement among FSP populations

Estimating clinical need ≠ who will access the service

BHSA is Designed to Serve a Broader Population

Background

People eligible for
Medi-Cal



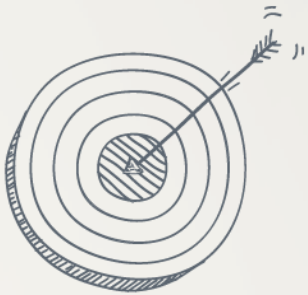
People who are
uninsured or not
eligible for Medi-Cal

BHSA Expansion

BHSA and BH-CONNECT are Complementary

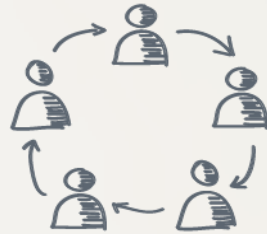
Background

Similar mission



Designed to meet the behavioral health needs of the most vulnerable Californians living with significant behavioral health needs

Serve the same priority populations



Focused on bolstering services for:

- People experiencing or at risk of homelessness
- People involved in the justice system
- Children and youth involved in the child welfare system

BH-CONNECT – Medi-Cal Only

BHSA – Medi-Cal ++

Strengthen investments in housing & workforce



BH-CONNECT allows for federal funding to support the workforce, while BHSA provides additional county-level and statewide investments

Source: [DHCS BHSA and BH-CONNECT EBP Overlap \(Updated August 2025\)](#)

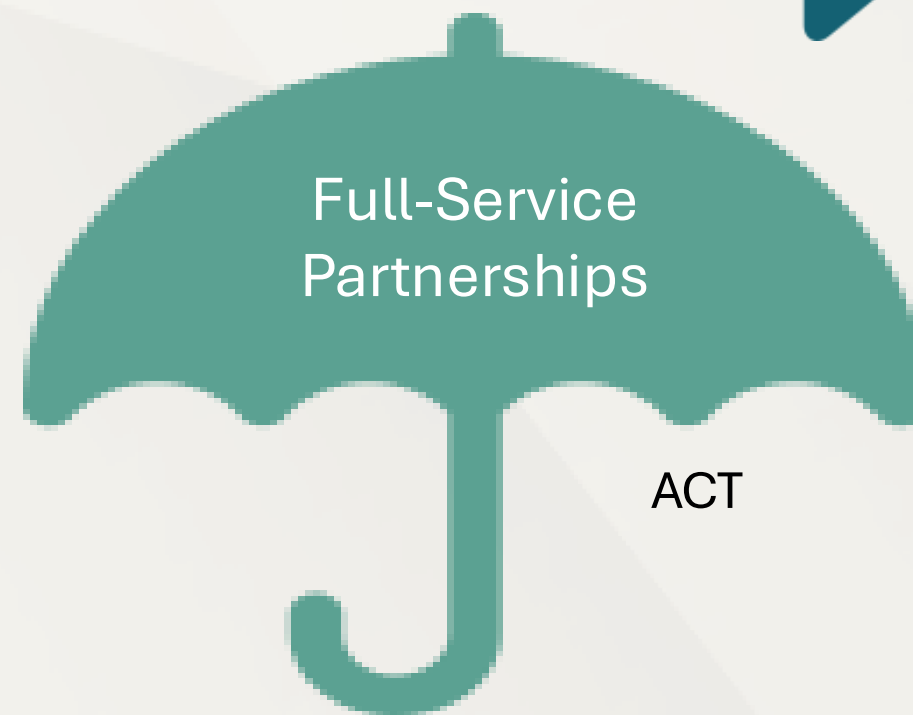
Assertive Community Treatment

EBP
Overview

Target Population

Adults living with serious mental illness (SMI) with significant functional impairment and high clinical service needs, such as:

- Consistent inability to perform practical daily tasks
- Have an indicator of high service needs (e.g., high use of psychiatric hospitalizations or emergency services, co-occurring substance use disorder (SUD), risk of homelessness, high risk of criminal legal system involvement)



Source: [BHSA County Policy Manual](#); [FSP Adult Levels of Care](#)

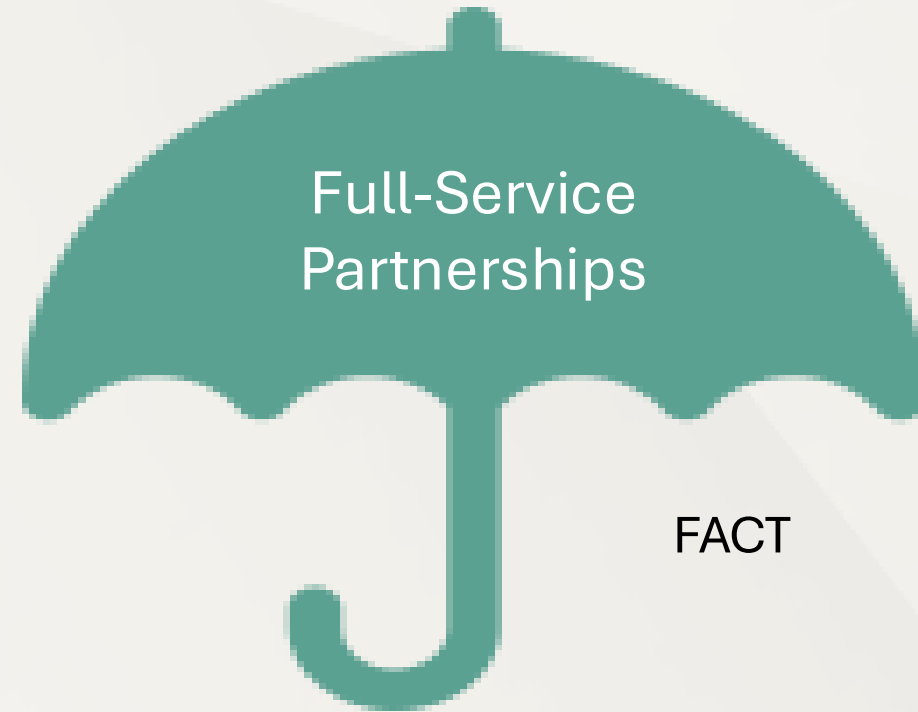
Forensic Assertive Community Treatment

EBP
Overview

Target Population

Adults with SMI or SMI and co-occurring SUD who qualify for ACT and have lived experience with the criminal justice system, such as:

- Those who have spent time in or have recently been released from a correctional facility
- Those who are at high risk of criminal justice involvement



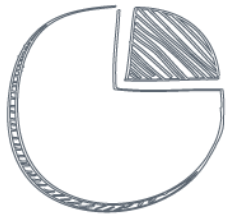
Source: [BHSA County Policy Manual](#); [FSP Adult Levels of Care](#)

Publicly-available data for ACT/FACT is limited

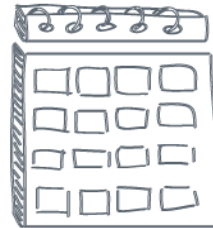
Two main sources:

MHSA County Performance Outcomes

BHSOAC Transparency Suite FSP Enrollment Dashboard



Focus on individuals served,
not total individuals with
clinical need



Limited by data completeness and
reporting delays



Limited in scope given
updated requirements and
guidance

ACT Model: Challenges & Solutions

Challenges

- Data availability
- Sparse literature on proportion of SMHS population meeting for ACT
- Factors driving clinical need for ACT vary county-by-county
- County-level indicators may vary year to year, resulting in a range of people with clinical need for services



Solution

- Use publicly available data at the county-level
- Select a method to estimate ACT populations at the county-level
- Use county-level population indicators to estimate realistic variability
- Account for realistic variation in the methodology by applying a simulation approach



Final ACT and Justice-Involvement Methodology

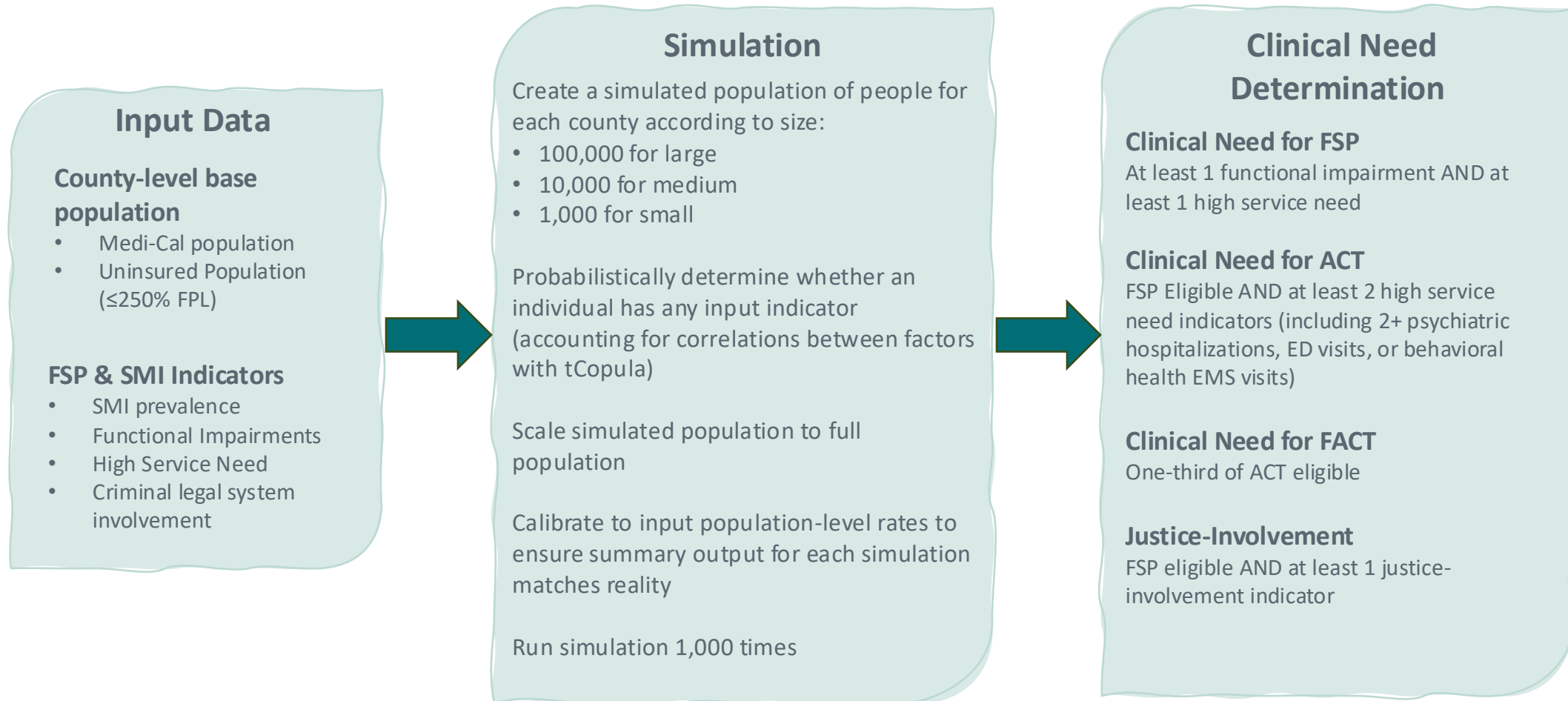
Simulation-based model using county-level indicators associated with FSP justice involvement and ACT clinical criteria

Rationale for FACT Estimate

- Availability of alternative justice pathways (e.g., mental health and drug court) are varied by county and not publicly available
- Publicly available data sources may not capture the full range of the justice continuum
- Literature indicates 30-50% of people enrolled in ACT have some history of justice-involvement ([Theriot et al. 2020](#), [van Vugt et al. 2016](#))

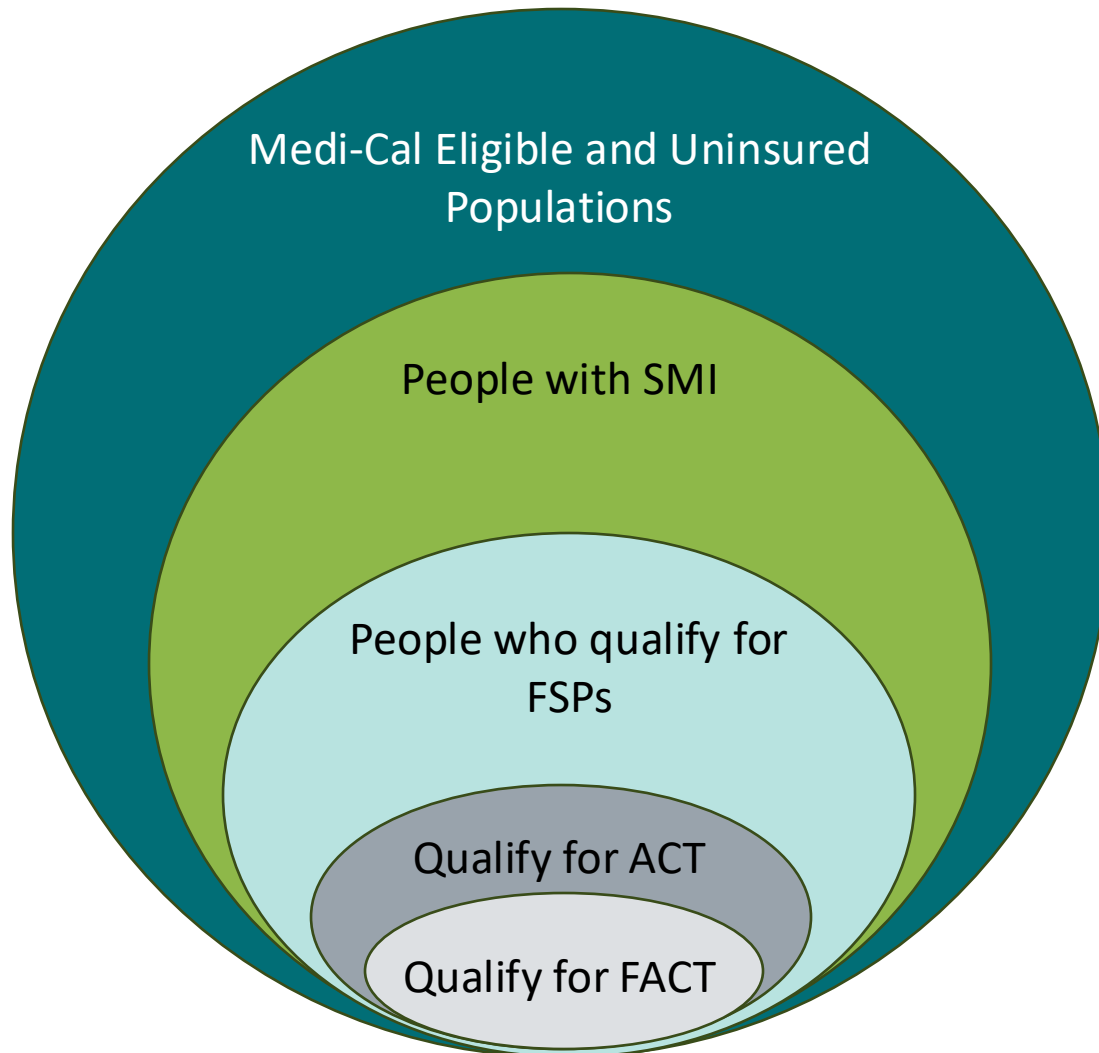
Solution: Estimate one-third of ACT population might qualify for FACT as a conservative standard

FSP, ACT/FACT Model Overview



Source: Kartik Kaushik, Cinzia Cirillo, Fabian Bastin. On Modelling Human Population Characteristics with Copulas. *Procedia Computer Science*. Volume 151, 2019, Pages 210-217. <https://doi.org/10.1016/j.procs.2019.04.031>; Laura B. Zwep, Tingjie Guo, Thomas Nagler, Catherijne A.J. Knibbe, Jacqueline J. Meulman, J. G. Coen van Hasselt. Virtual Patient Simulation Using Copula Modeling. *Clinical Pharmacology & Therapeutics* Volume 115, Issue 4 pp. 795-804. <https://doi.org/10.1002/cpt.3099>

ACT/FACT are among FSP Populations



People who qualify for FSPs

At least 1 functional impairment AND 1 high service need indicator

People who qualify for ACT

FSP eligible AND 2+ high service need indicator (including 2+ psychiatric hospitalizations, EMS, or ED visits)

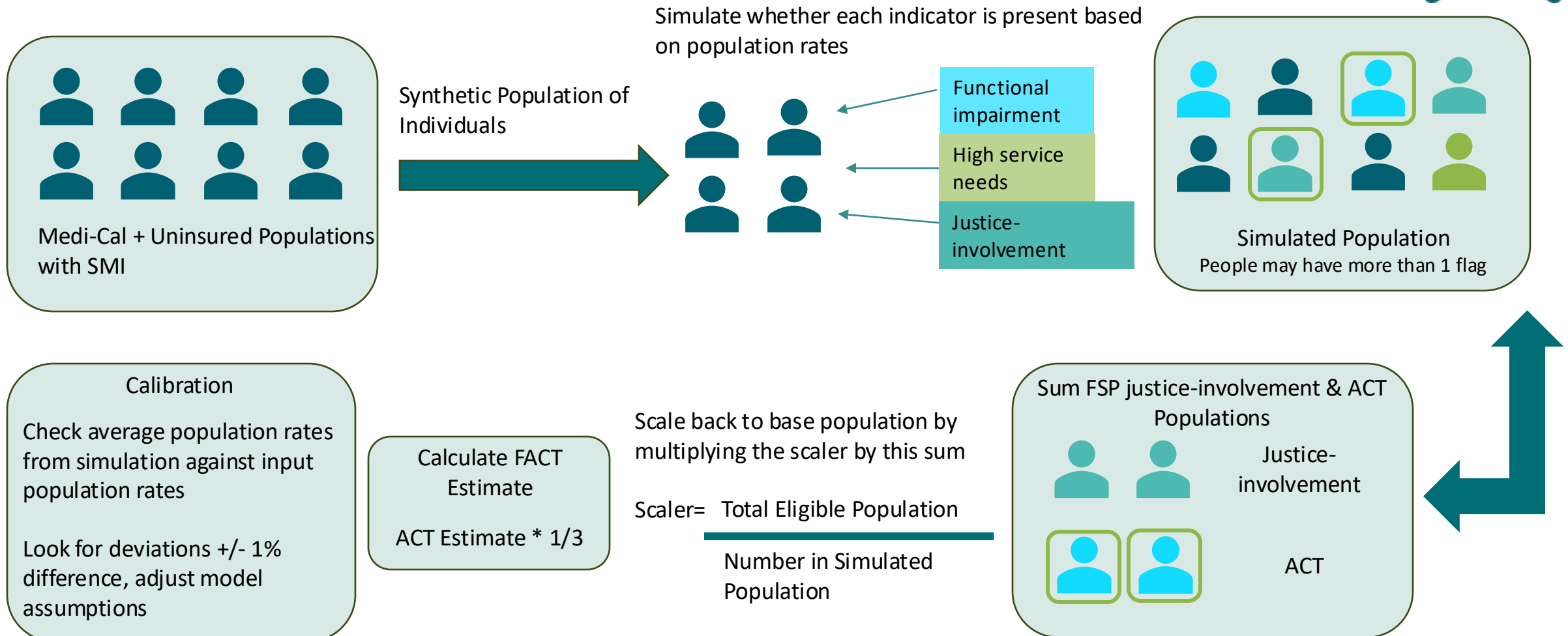
People who qualify for FACT

Estimated 1/3 of ACT population

Size of circles are for illustrative purposes and do not reflect underlying percentages of people who fall into each group

Simulation Modeling Approach

Simulation
Model
Methods



Creating a realistic synthetic population that mirrors county patterns for potential BHPs clients

For synthetic person #7,209 in the simulation....

Functional Impairment Indicators

- ✓ Currently receiving SSI benefits
- ✓ Experiencing a disability resulting in challenges with daily living tasks
- ✗ Does not have a disability due to cognition or self-care

High Service Need Indicators

- ✓ Diagnosed with a co-occurring SUD
- ✗ Has not experienced homelessness in the past year
- ✗ Has not used HMIS services in the past year
- ✓ 1 arrest in the past year
- ✓ 3 psychiatric EMS visits in the past year
- ✓ Currently on probation

EBPs with clinical need for #7,209 (who is living with SMI)

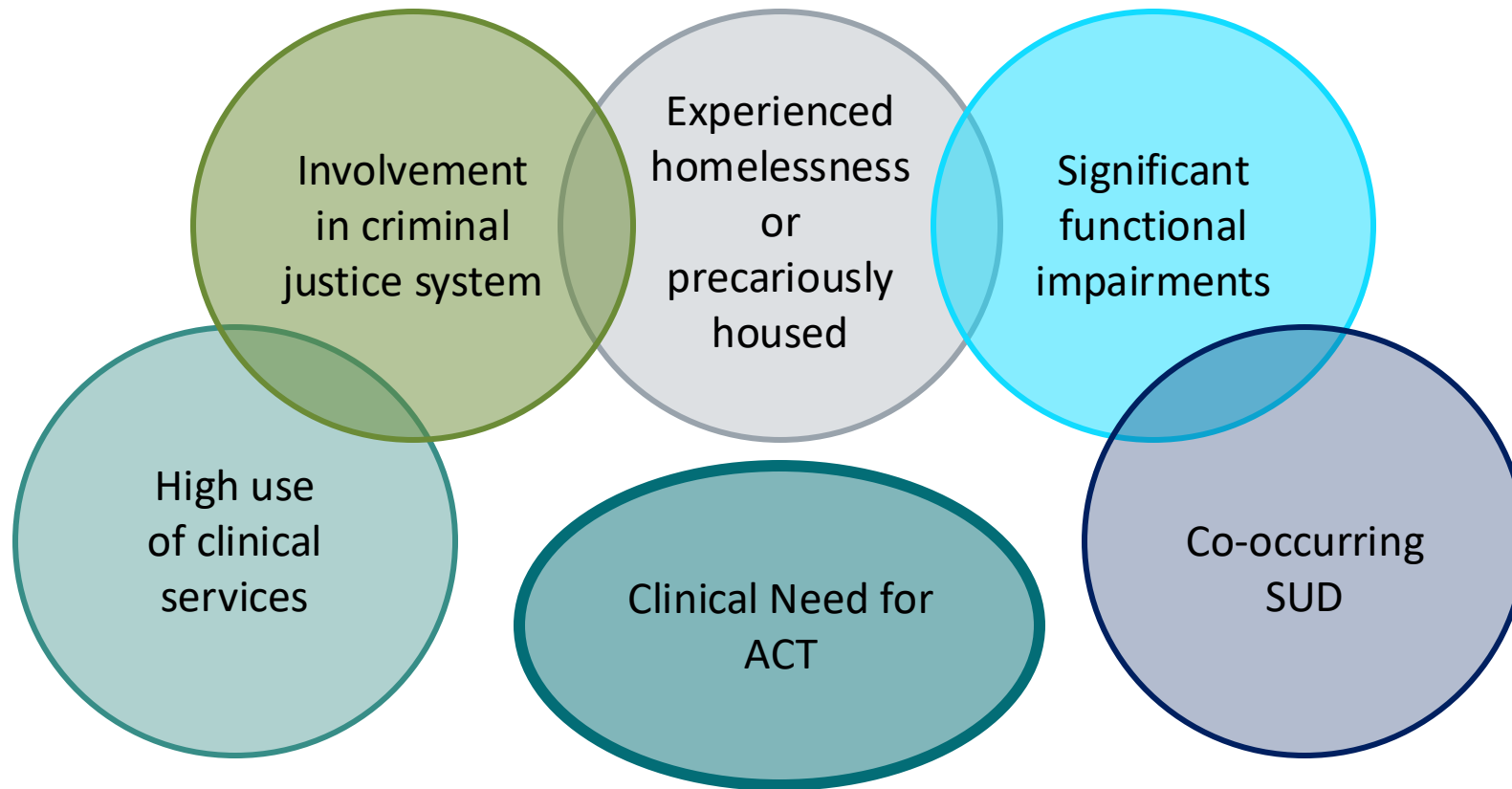
ACT

2+ High service needs +
functional impairment

Justice-involvement

Currently on probation
History of arrest

The model allows for many different "routes" to clinical need for ACT/FACT



Multiple pathways, not one single indicator: Individuals flagged as having clinical need for ACT through various combinations of overlapping risk factors.

The t-copula links these distributions together at the high end of the spectrum

Simplified Approach

- Estimate each factor separately and multiply them together (e.g., % SMI x % with SUD)
- Combine factors independently, so may significantly undercount populations

Problem: Ignores that these factors are connected

T-copula Approach

- Someone with SMI has a different likelihood of experiencing different service need characteristics and functional impairments
- Several indicators are correlated with each other in unique ways
- Creates a **joint distribution**: simulates many factors at once while maintaining complex correlations

Goal: to capture people with 2+ high service needs and 1+ functional impairments

With t-copula, someone at the **high end** of one distribution (e.g., 3-5 ED visits) is **more likely** to also be at the high end of another distribution (e.g., 2-5 psychiatric hospitalizations)

What We're Estimating Follows a Distribution

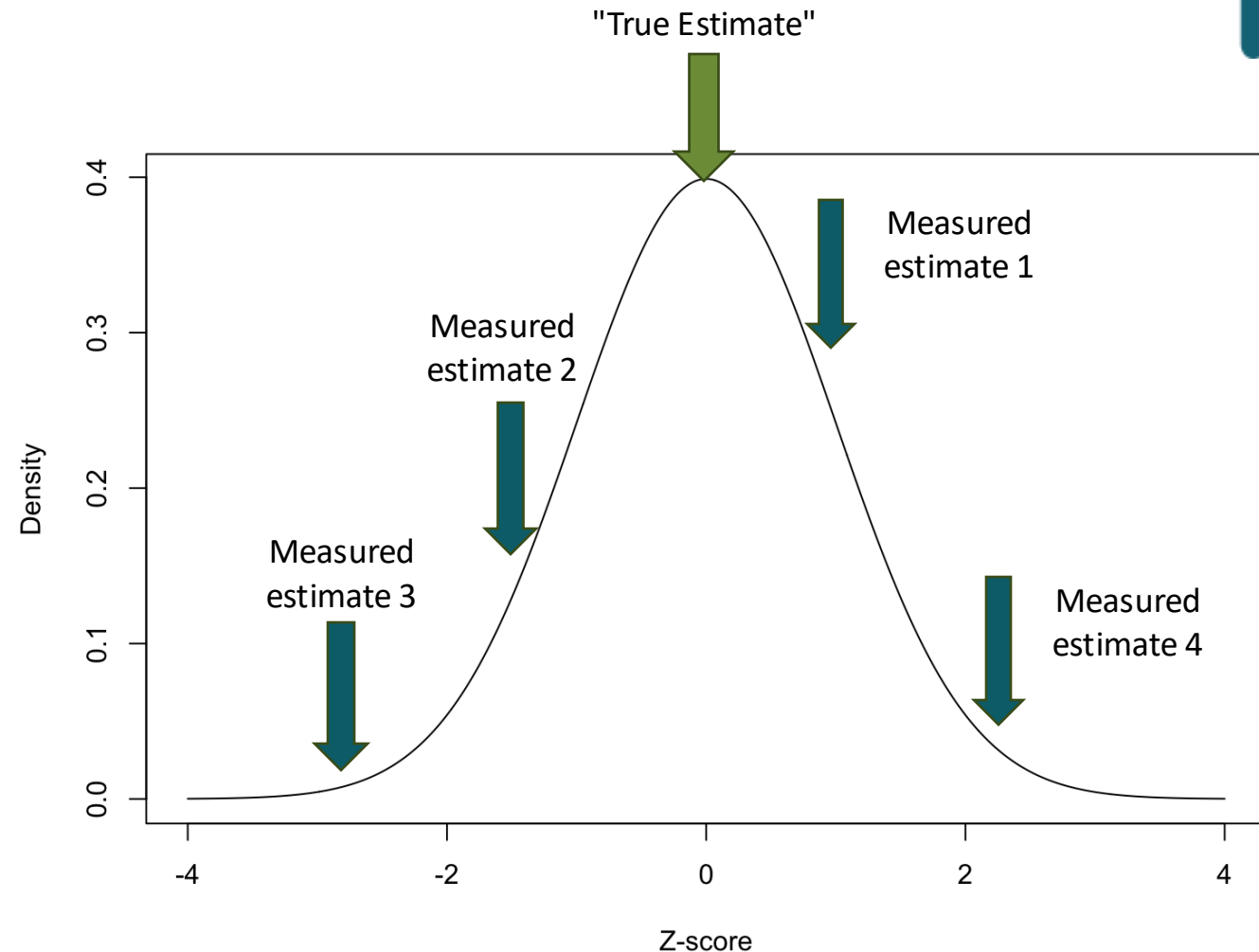
We're looking for one estimate...

But everything we measure depends on:

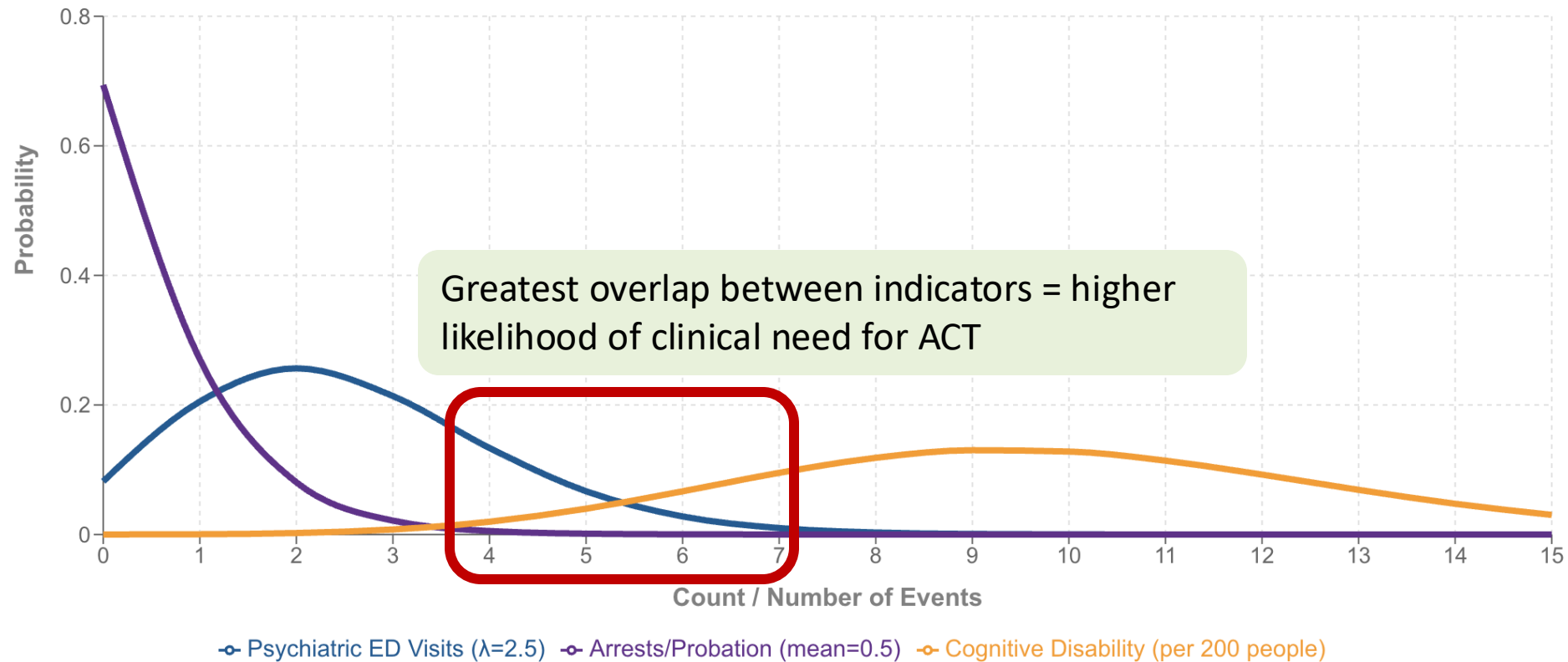
- Time of measurement
- Population it's being measured in
- How it's being measured
- Other underlying factors

Distributions help us visualize:

- Range of plausible values given what we measured
- Acknowledge realistic uncertainty
- The "most common" result through the average/mean

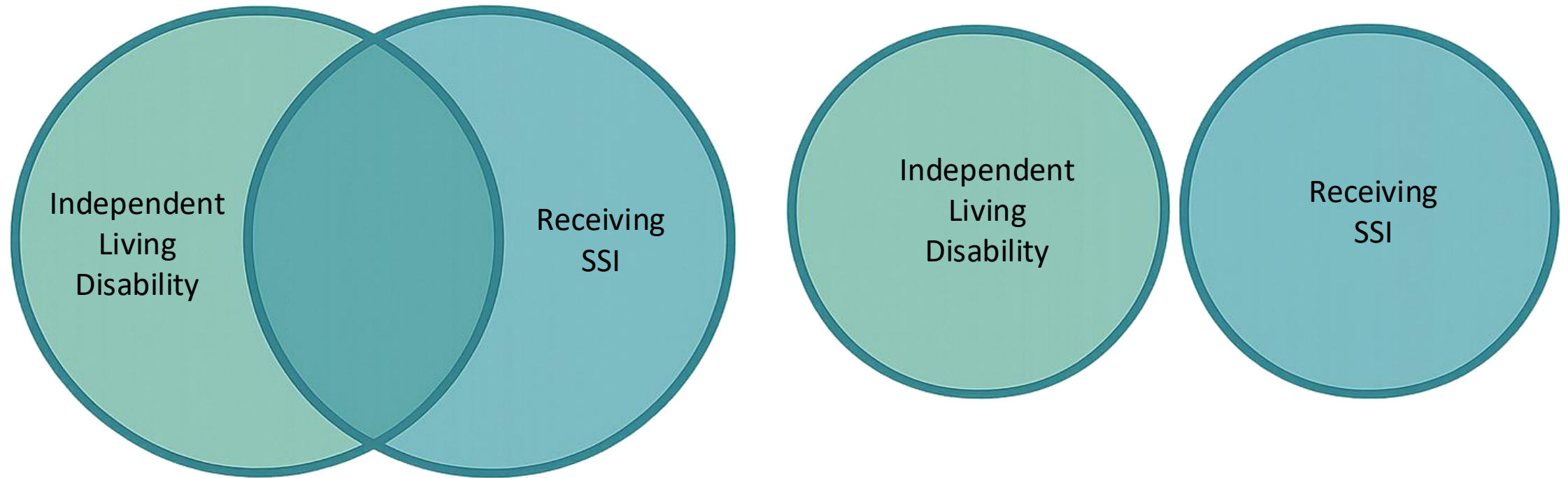


We're Simulating a Joint Distribution of Many Factors Occurring Together



In this joint distribution, we're interested in people at the **high** end of the spectrum. Who might benefit from more intensive services?

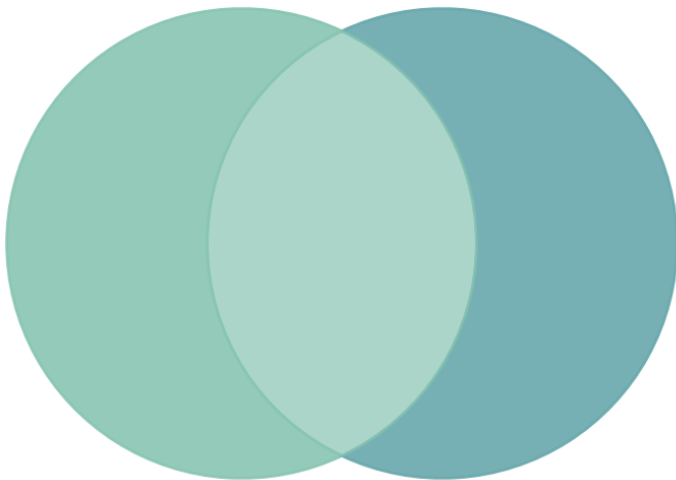
Account for correlations between indicators



tCopula simulation accounts for the correlation between FSP indicators so we're not over- or undercounting populations with clinical need.

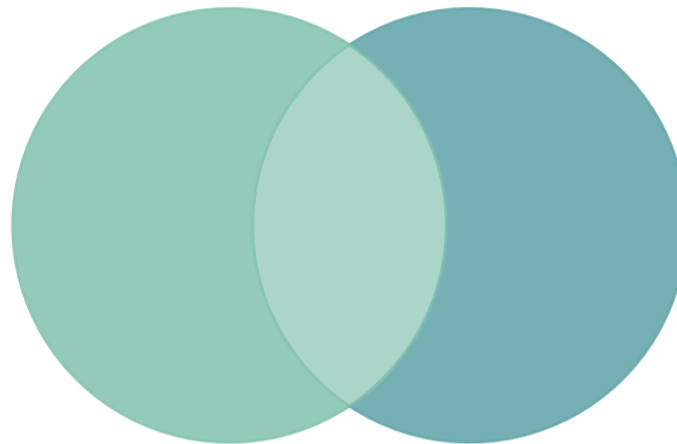
Correlations between factors can be tailored

High Correlation



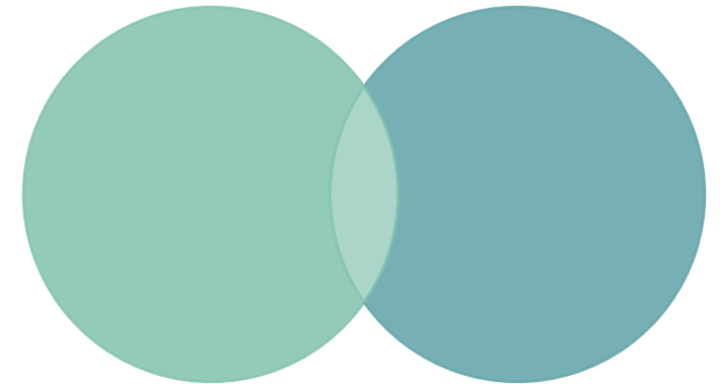
Unemployment rate
Prevalence of self-care disabilities

Medium Correlation



Independent living disability
Rates of SSI per population

Low Correlation



Arrest Rates
Probation Rates

Methods for Identifying Correlations

1

Explored correlations between indicators

- Population-level correlations*
- Subject matter expert clinical review
- Literature review

2

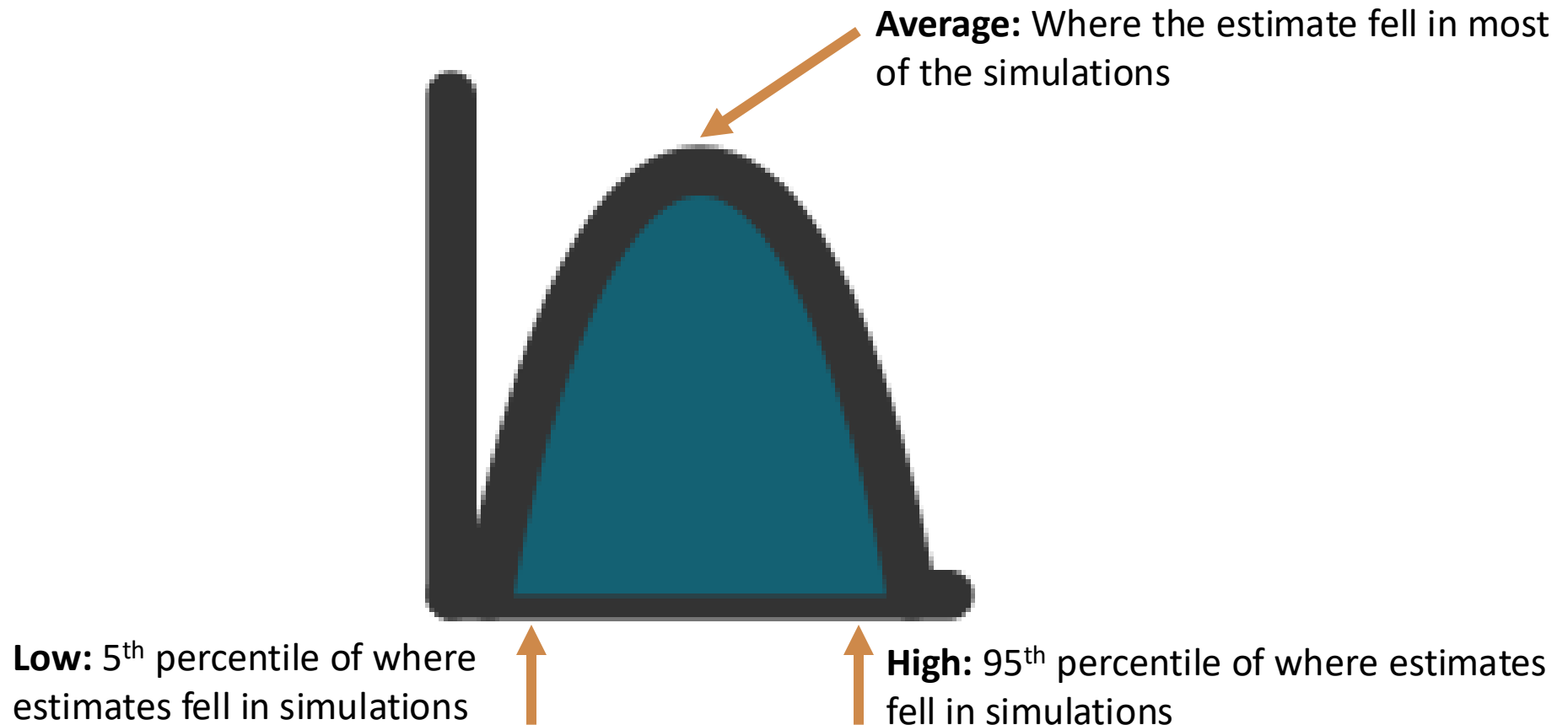
Correlations between pairs assigned into four groups:

High ($r=0.70$)
Medium ($r=0.50$)
Low ($r=0.30$)
Baseline ($r=0.10$)

*Only used as a guide given the absence of individual-level data. Relying on population-level correlations alone is prone to bias (ecological fallacy), which impacts the ability to make inference about individuals from data at the county-level.

How do we handle uncertainty?

95% Credible Intervals: Based on the model and available data, estimates the range in which the value is expected to fall with 95% probability



Any Questions?



ACT/FACT Simulation Model Data Sources

Overview of
Data
Sources

Functional Impairment Indicators

- Supplemental Security Income (SSI) rates
- Proportion with disability due to:
 - Challenges with daily living tasks
 - Self-care
 - Cognition

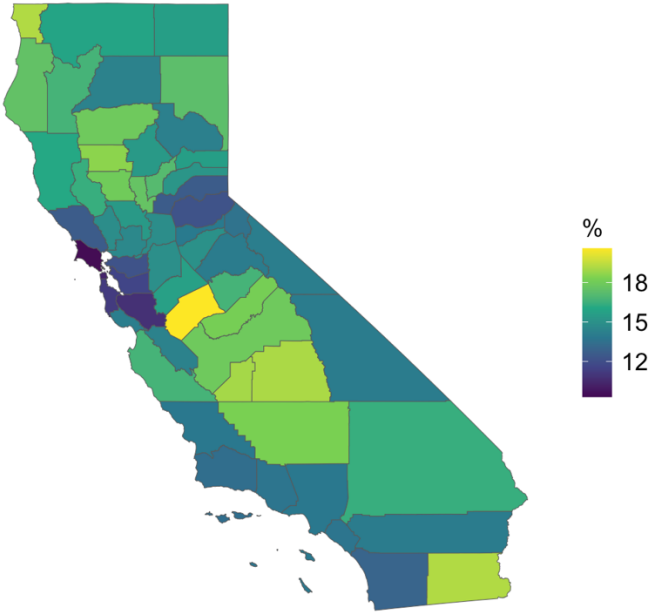
High Service Need Indicators

- SUD prevalence rates (DHCS)
- HMIS utilization rates
- PIT homelessness rates
- Psychiatric EMS visit rates
- ED discharges due to psychiatric care rates
- Inpatient psychiatric hospitalization rate
- Arrest rates
- Probation rates
- Recidivism rate among formerly incarcerated (estimated 6.7% SMI)

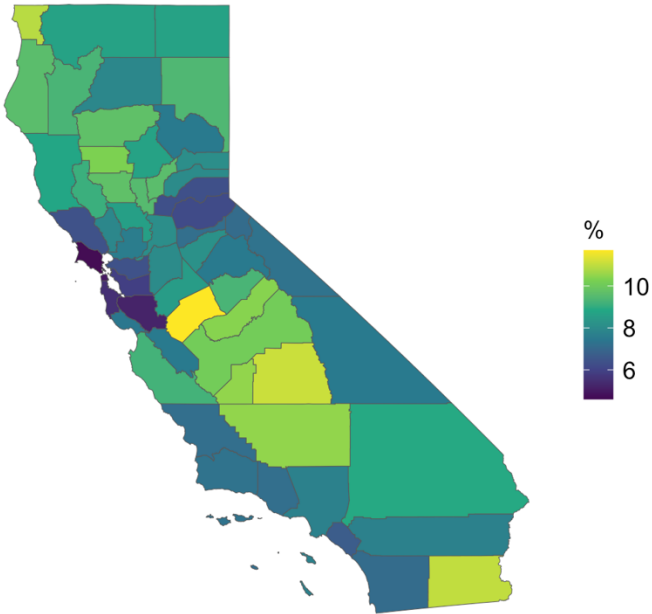
Functional Impairment Indicators Vary by County

Overview of
Data
Sources

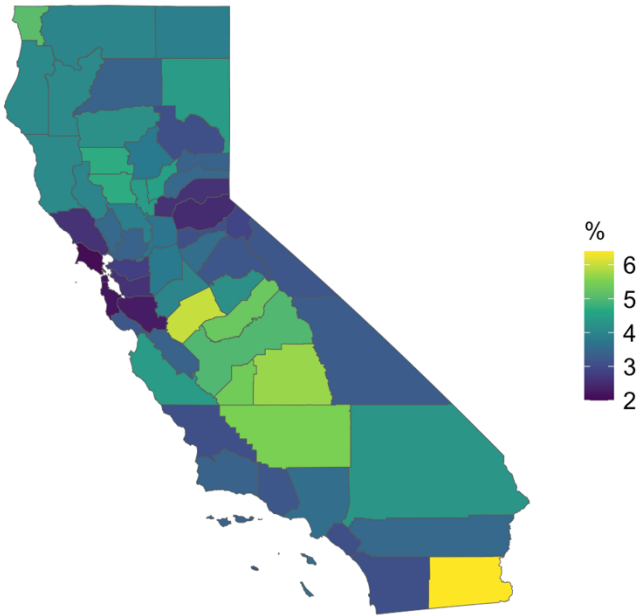
Age-Adjusted % Cognition Impairment (Adults 18+)



Age-Adjusted % Independent Living Impairment (Adults 18+)



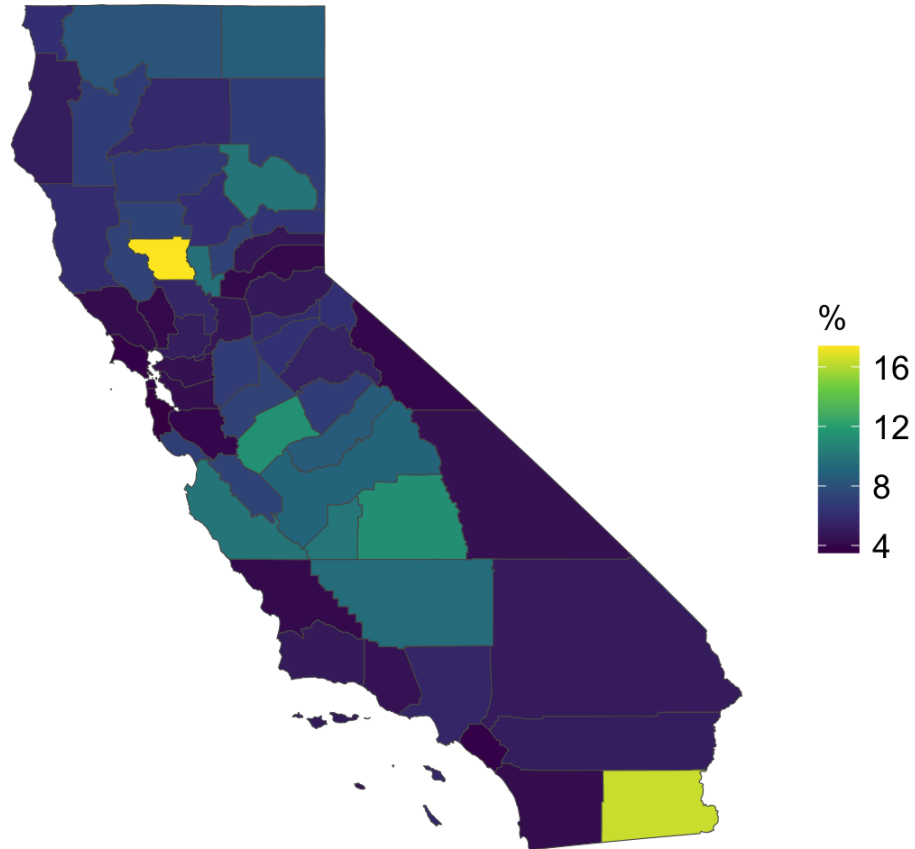
Age-Adjusted % Self Care Impairment (Adults 18+)



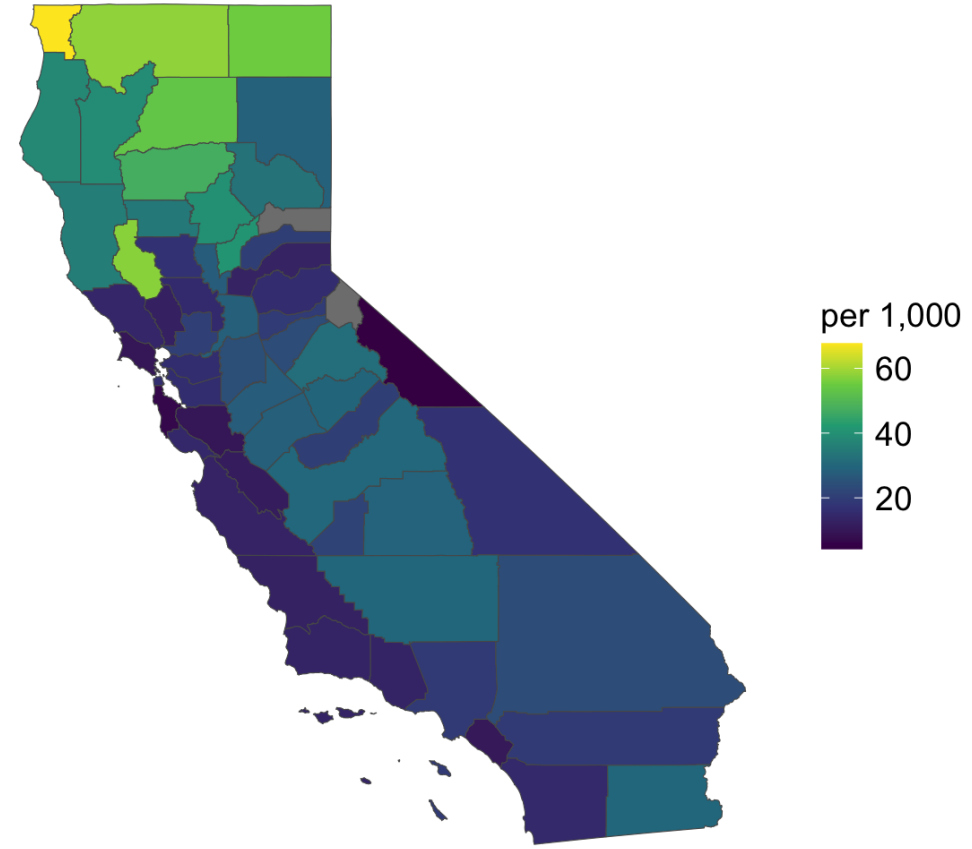
Functional Impairment Indicators Vary by County

Overview of
Data
Sources

Unemployment % (Adults 16+)



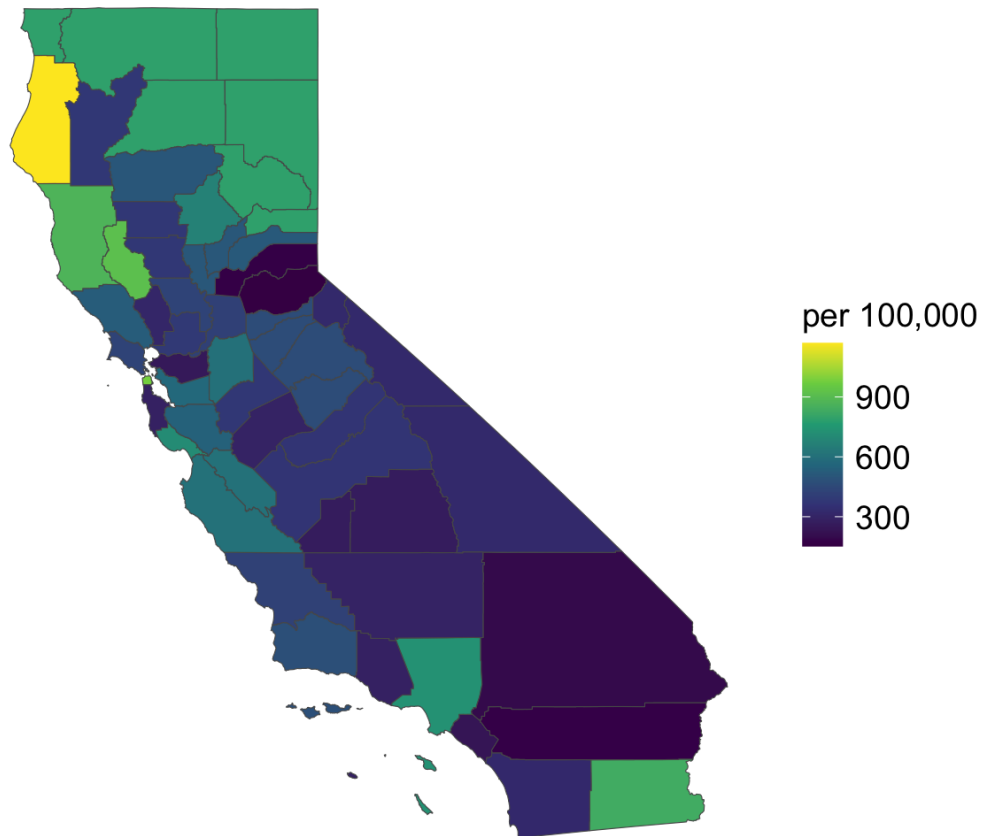
SSI Rates per 1,000 Adults (18-64)



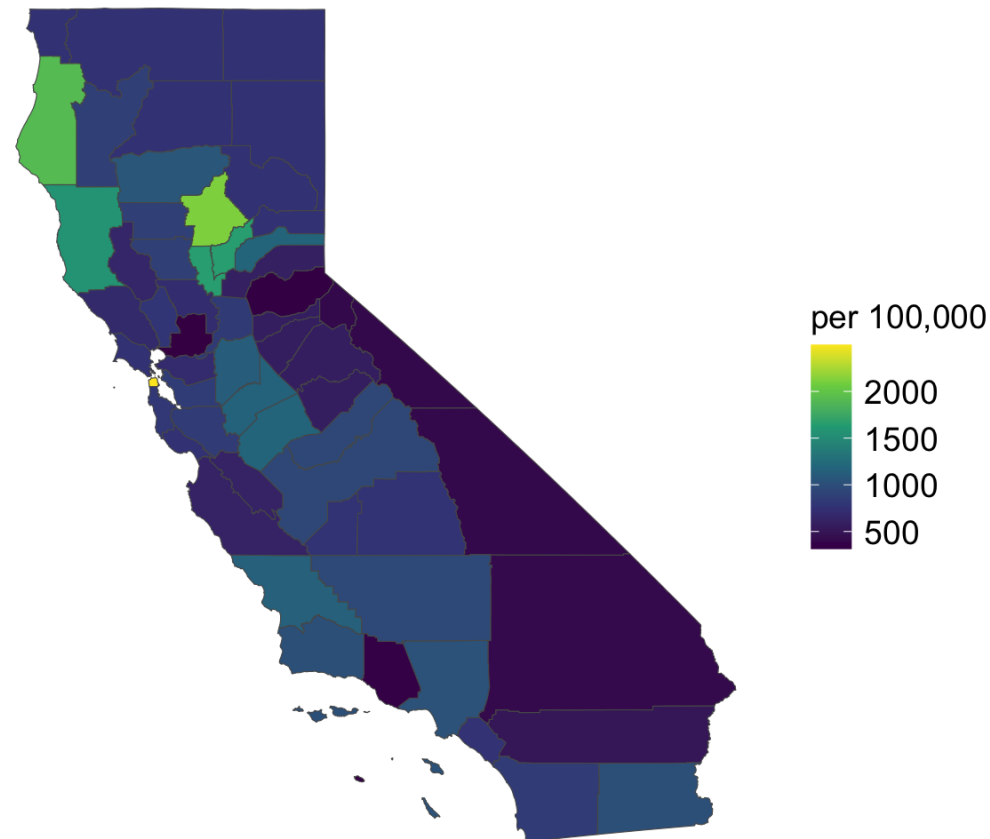
Housing Indicators Vary by County

Overview of
Data
Sources

Homelessness PIT Count per 100,000 Population



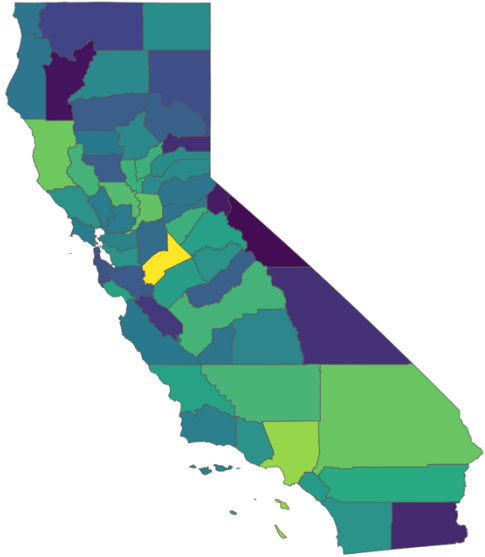
HMIS Utilization per 100,000 Population (All Ages)



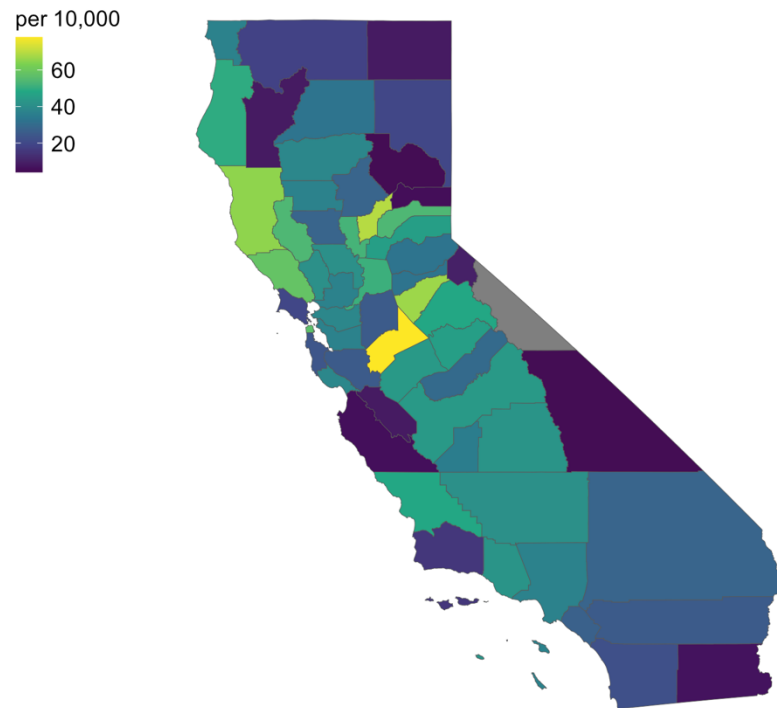
Clinical Indicators Vary by County

Overview of
Data
Sources

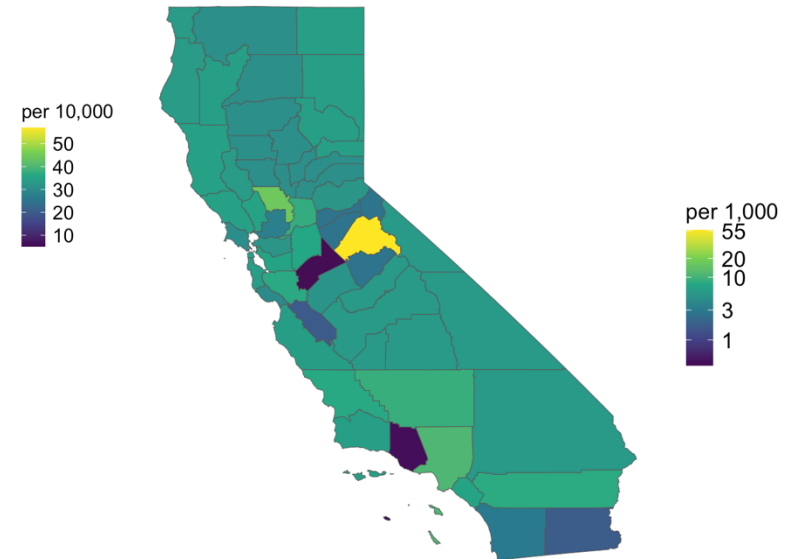
Psychiatric Hospitalizations per 10,000 Population (All Ages)



Psychiatric ED Visits per 10,000 Population (All Ages)



Behavioral Health EMS Calls per 1,000 Population (All Ages) (log scale)



Given the wide distribution of psychiatric/behavioral health EMS calls by county, it was challenging to visualize differences between these factors. As a result, this measure was log-transformed.

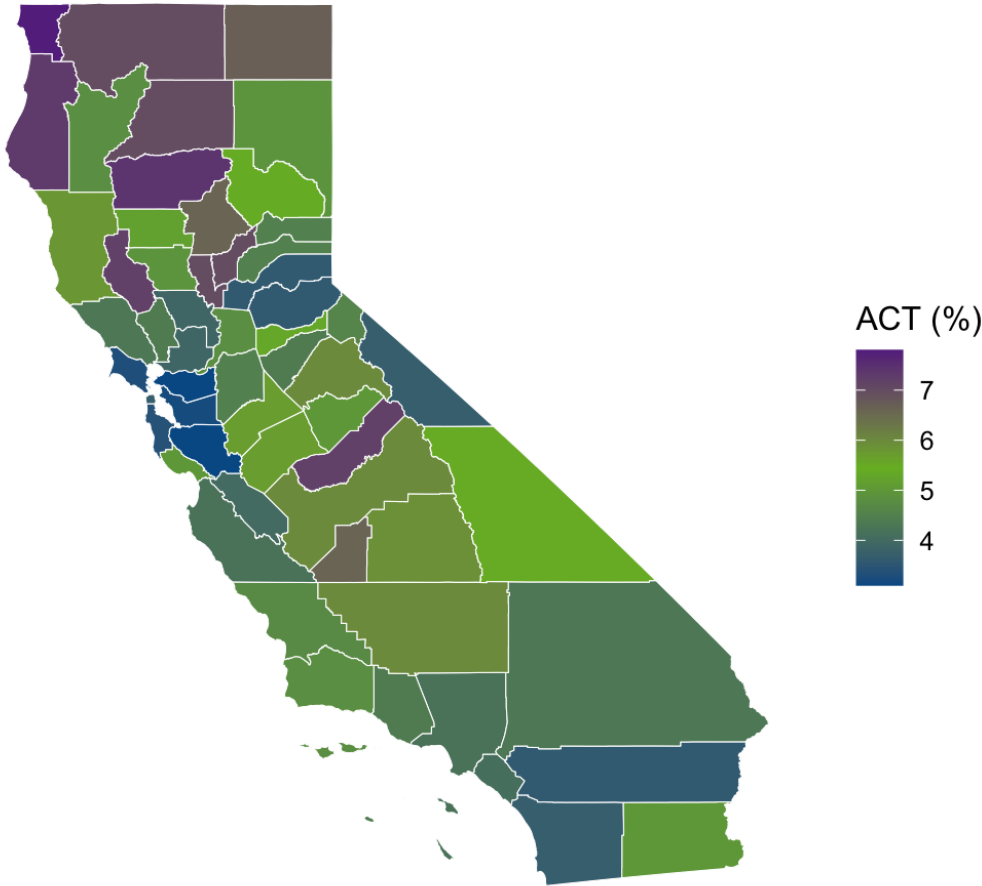
Variation in estimated clinical need for ACT statewide

Population	# in Group (19-64)	Target Population (SMI)	Estimated ACT	Estimated % ACT
Medi-Cal	8,245,677	486,202 (464,662-507,417)	21,116 (16,819-26,411)	4.3% (3.6-5.2%)
Uninsured	1,191,137	70,234 (67,344-73,276)	3,058 (2,417-3,804)	4.4% (3.6-5.2%)

Key Takeaway

Range from **3.1% to 8%** of Medi-Cal/Uninsured with SMI estimated to have clinical need for ACT by County

Estimated % ACT Population by County
Percentage among Medi-Cal Population with SMI



Based on diagnosis-based SMI prevalence for Medi-Cal eligible populations

Variation in estimated clinical need for FACT statewide

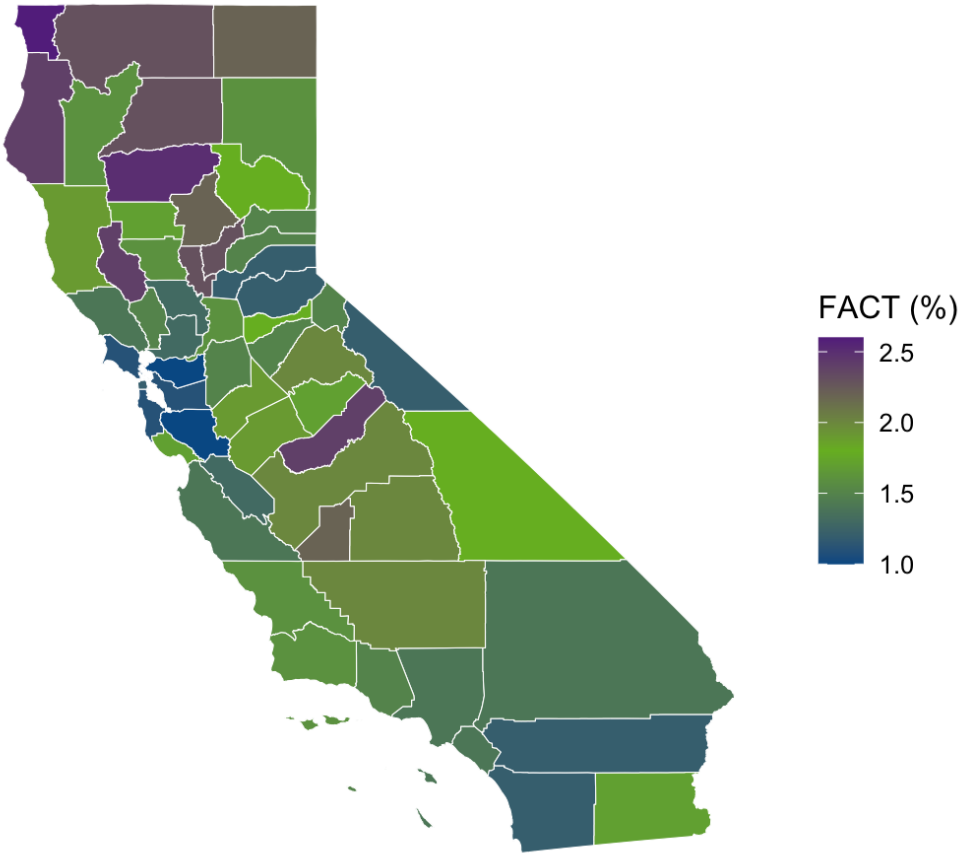
Estimated % FACT Population by County
Percentage among Medi-Cal Population with SMI

Population	# in Group (19-64)	Target Population (SMI)	Estimated FACT	Estimated % FACT
Medi-Cal	8,245,677	486,202 (464,662-507,417)	7,041 (5,607-8,802)	1.4% (1.2-1.7%)
Uninsured	1,191,137	70,234 (67,344-73,276)	1,019 (804-1,267)	1.5% (1.2-1.7%)

*Estimated 1/3 of populations with clinical need for ACT might have justice involvement indicating clinical need for FACT.

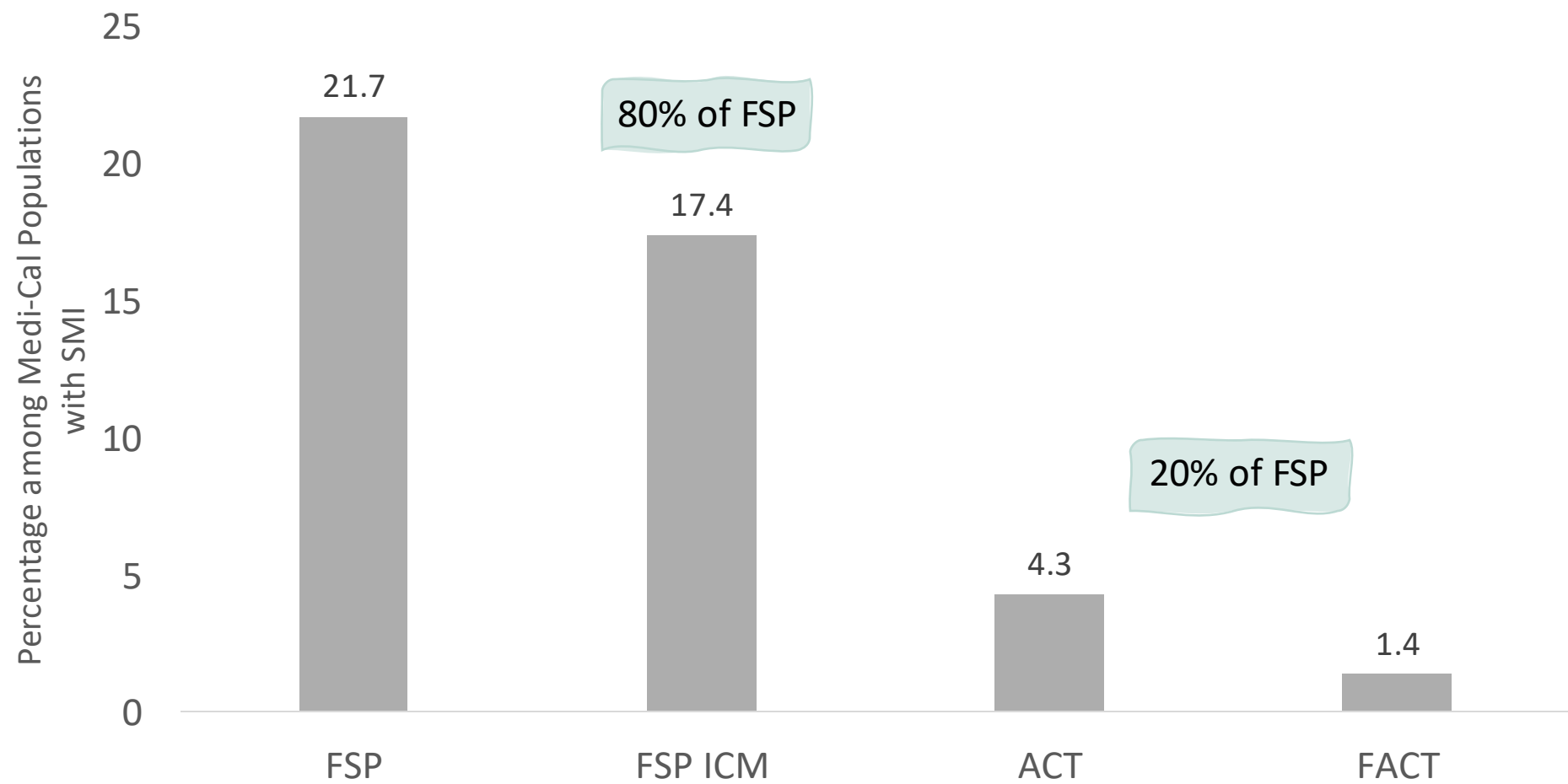
Key Takeaway

Range from **1.0% to 2.7%** of Medi-Cal/Uninsured with SMI estimated to have clinical need for ACT and justice involvement by County



Based on diagnosis-based SMI prevalence for Medi-Cal eligible populations

Estimated % SMI population by FSP adult levels of care statewide

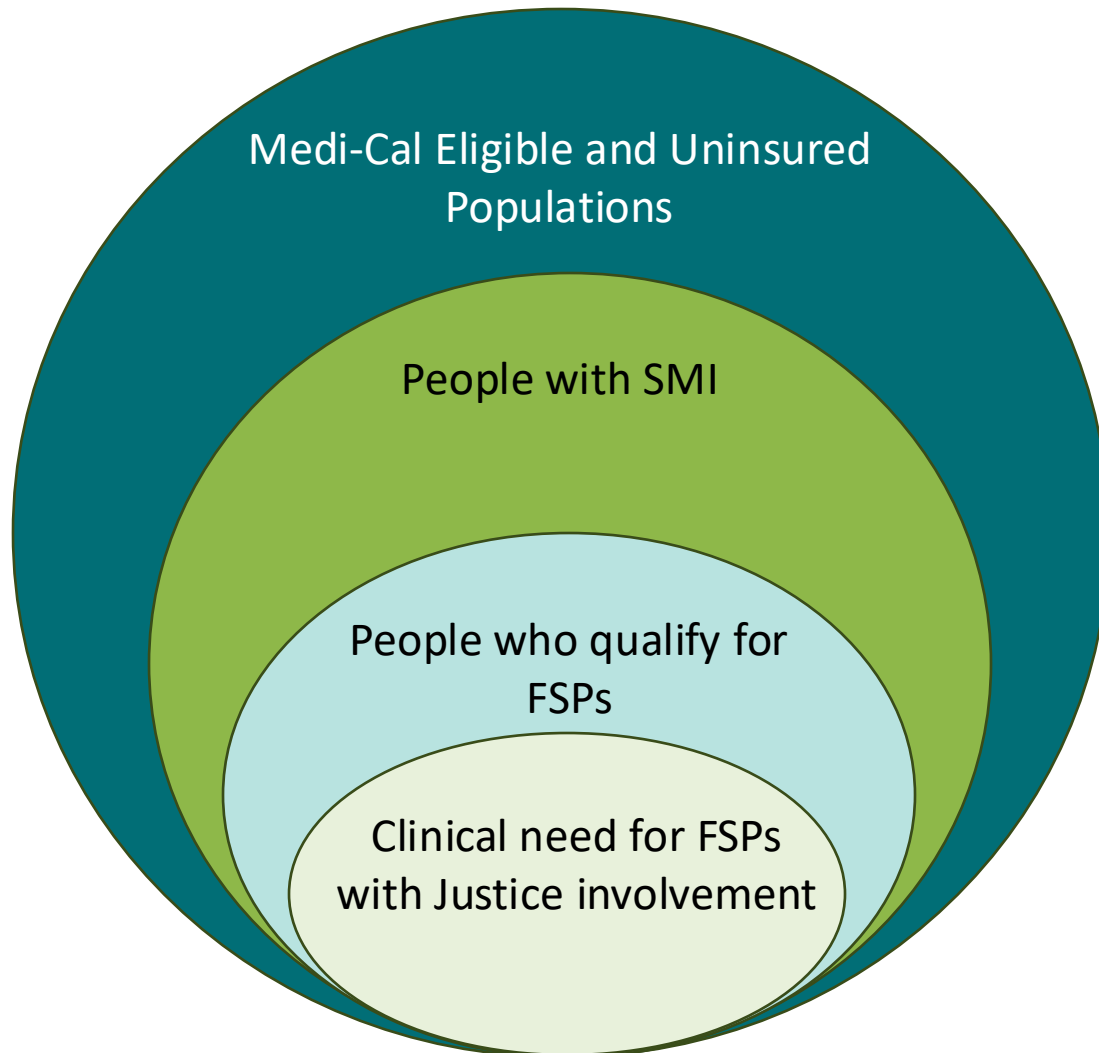


Any Questions?



Estimated Justice involvement among FSP Populations

Overview of
Data
Sources



People who qualify for FSPs

At least 1 functional impairment AND 1 high service need indicator

People who meet clinical need for FSP & have justice-involvement

FSP eligible AND at least 1 justice involvement indicator

Size of circles are for illustrative purposes and do not reflect underlying percentages of people who fall into each group

Justice-Involvement Indicators

Indicator	Description	Source	Data Source Year
Recent Probation	Rates of adults (18+ years) on probation per 10,000 population	CA DOJ Open Justice Initiative	Dec 2023
Recent Arrest	Arrest rates per 10,000 adults (18-69 years old) based on total county population	CA DOJ Open Justice Initiative	2023
Recidivism Rates among Formerly Incarcerated	Proportion of people released from incarceration with conviction within 2-year. Applied only among those flagged as having prior incarceration history (see below)	<u>California Department of Corrections and Rehabilitation</u>	2019-2020
Estimated Proportion of people with SMI who have a history of incarceration	Study reported 6.7%. Applied to those flagged as SMI.	<u>Nakic et al. 2021. Lifetime risk and correlates of incarceration in a nationally representative sample of U.S. adults with non-substance-related mental illness.</u>	2021
Recent incarceration or release from incarceration	Rates of jail + prison incarceration per 100,000 adult population (15-64 years)	<u>California Incarceration Trends. Vera Institute of</u>	2020

Source among Medi-Cal population

Source among full population (i.e., mixed payer) where Medi-Cal was unavailable

Indicators across Justice Continuum

Component of System	Arrest	Conviction/Charges	Community Supervision	Incarceration	Recidivism
Publicly Available Indicator	Arrest Rates		Probation Rates	Rates of Incarceration in a jail or prison History of past incarceration among people living with SMI	Recidivism among people incarcerated in a prison

*Visual for illustrative purposes and does not capture the full justice continuum or all potential contextual factors.

Considerable variation in Justice-Involvement among FSP Populations

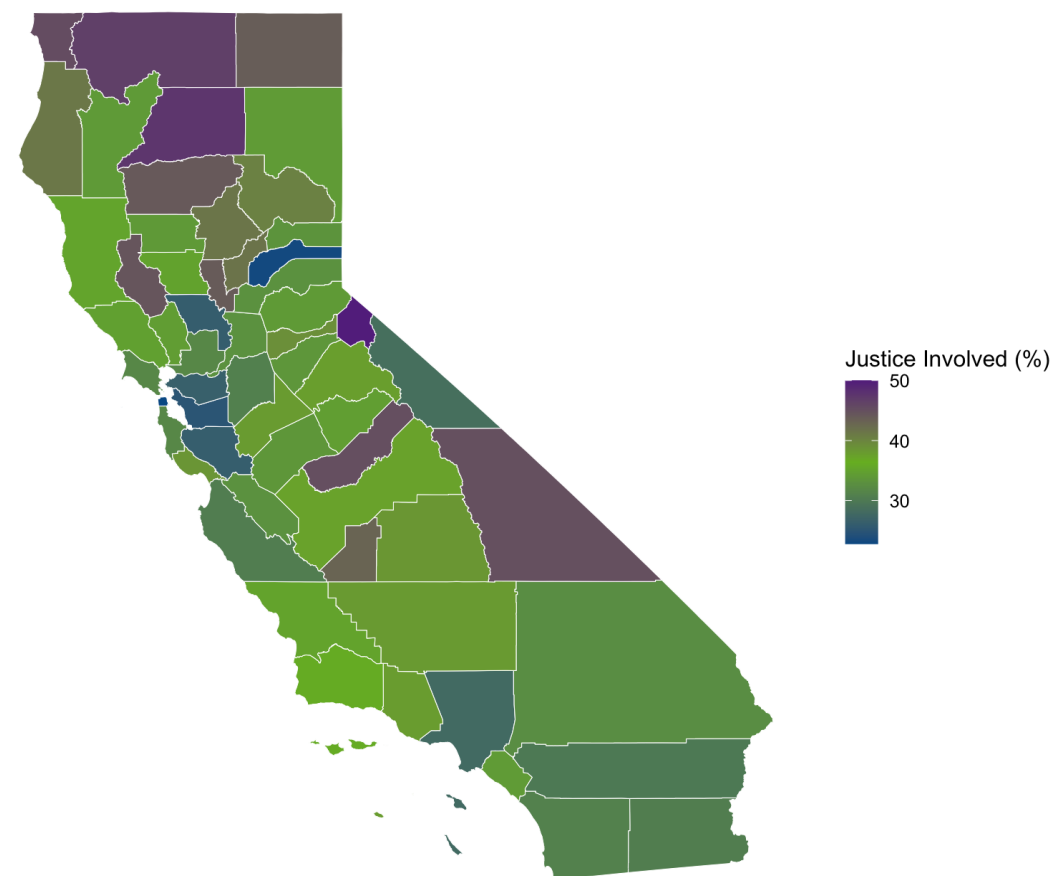
Population	# in Group (19-64)	Estimated FSP	Estimated # with justice-involvement	Estimated % FSP with some justice Involvement
Medi-Cal	8,245,677	105,624 (95,559-116,183)	33,533 (27,719-40,176)	31.7% (29.0-34.6%)
Uninsured	1,191,137	15,308 (13,911-16,894)	4,820 (4,028-5,735)	31.5% (30.0-33.9%)

Key Takeaway

Range from **22.4% to 48.1%** of FSP population estimated to have some justice-involvement*

*Several counties with small populations estimated 0 and 50% of FSP individuals with some justice involvement as a result of small estimated FSP populations (between 0-6).

Estimated % with Justice Involvement by County
Percentage among Estimated FSP Population



Based on diagnosis-based SMI prevalence for Medi-Cal eligible populations

Any Questions?



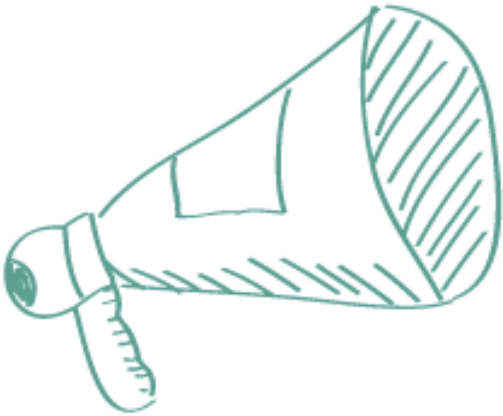
ACT/FACT - Limitations

Limitation	How we addressed it
Availability of county-level public data sources for functional impairment and high service need	Used a wide array of input indicators, where one may not fully serve as proxy, another can fill in the gaps
Some data sources may capture a rate that is higher or lower than Medi-Cal and uninsured populations	Modeled realistic variability around each indicator, recognizing that county-level averages provide a mean that these sub-groups contribute to
Validity of public data sources	Data sources believed to be the best source of the underlying criteria were selected, some believed to be low quality were excluded
Availability of data on local forensic environments	Relied on literature-based estimates

ACT/FACT and Justice-Involvement - Conclusions

Limitations
&
Conclusions

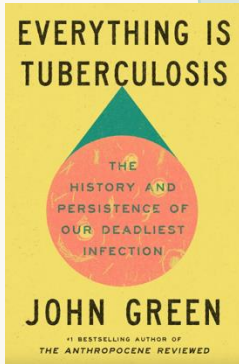
- We designed a robust ACT/FACT and justice-involvement simulation model with 15 county-level functional impairment, high service need, and employment indicators
- These estimates may serve as a helpful guide for individuals with clinical need for ACT/FACT and FSP programs focused on individuals with justice-involvement
- Population models relying on local data (e.g., individual-level diagnosis and service data) would arrive at different estimates



"All models are wrong, but some are useful"
-George E. P. Box

In absence of BHP-specific data, these estimates incorporate prior knowledge from the literature or unique county contexts while also capturing uncertainty to inform BHP planning.

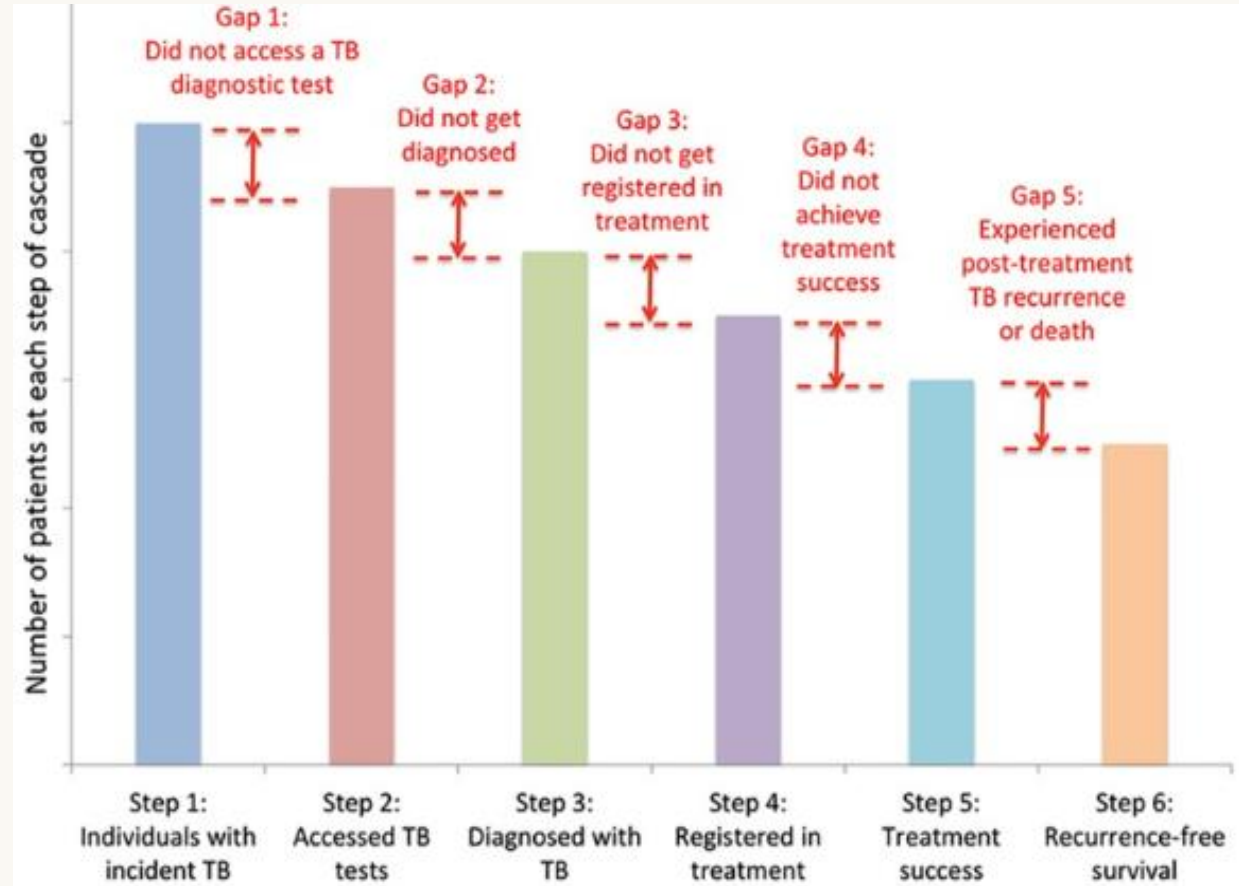
Clinical Need ≠ Served



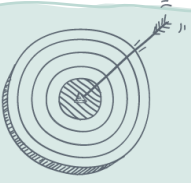
Many people who qualify for an intervention may not access it.

Only 43% of those eligible for TB treatment were successfully treated.

TB Care Cascade – General Model for people with any form of active TB in India, 2013



Source: [Subbaraman et al. 2019](#)



Estimated Population ≠ Served Population

Multiple contributing factors affect the subset of individuals who will access and use these services



Individual Factors*



Not able to access services (e.g., incarceration, hospitalization)



Refusal or inability to engage



Mismatch with available FSP model (e.g., prefers lower-intensity care)



System Factors*



FSP funding available (e.g., 35% of BHSA funds)



Provider shortages/workforce limitations



Program capacity & fidelity constraints



Served Population

Estimated Population with clinical need reduced by Individual Factors and/or System Factors

*The listed components serve as examples and are not comprehensive of all contributing factors.

Webinar Series

Overview of
Webinar
Series

1

Introduction & Methods Overview – October 28, 2025

2

FSP and IPS Model – October 31, 2025

3

Justice-Involvement, ACT/FACT Model – November 4, 2025

4

CSC Model & Considerations for Interpretation of Estimates – November 6, 2025

What's next

Thank You!

Haylea Hannah, PhD, MSPH

Senior Epidemiologist

managedcare@calmhsa.org

Questions about the estimate document from
DHCS or the BHSA IP process?

Bhtinfo@dhcs.ca.gov

CalMHSA